MILITARY SPECIFICATION

STRAINER, SEDIMENT, JET FUEL UNIT, 600 GPM

This specification is approved for use by all departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers a 600 gallons per minute (gpm) Jet fuel unit sediment strainer.

1.2 Classification. Sediment strainers shall be furnished in the following types (see 6.2):

Type I - Grooved connections.

Type II - Flanged connections.

2, APPLICABLE DOCUMENTS

* 2.1 Government documents.

* 2.1.1 Specifications and standards. Unless otherwise specified (see 6.2), the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

PPP-B-97	Tape, Pressure Sensitive Adhesive, Filament Reinforced,
MMM-A-260	Adhesive, Water-Resistant, (for Sealing Waterproofed Paper).
PPP-B-576	Box, Wood, Cleated, Veneer, Paper Overlaid.
PPP-B-585	Box, Wood, Wirebound.
PPP-B-591	Boxes, Shipping Fiberboard, Wood-Cleated.
PPP-B-601	Boxes, Wood, Cleated Plywood.
PPP-B-621	Box, Wood , Nailed and Lock-Corner.
PPP-B-636	Boxes, Shipping, Fiberboard.
PPP-B-640	Boxes, Fiberboard, Corrugated, Triple-Wall.
AA-A884	Tape, Pressure-Sensitive Adhesive, Box Closure.

* Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: the Engineering Division, San Antonio ALC/MMEDO, Kelly AFB, Texas 78241 by using the self addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

PPP-B-1055	Barrier Material, Waterproofed Flexible.
A-A-1586	Tape Pressure-Sensitive, Adhesive Waterproof.
A-A-1830	Tape Pressure Sensitive Adhesive Box Closure,

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MIL-P-116	Preservation, Methods of.
DOD-D-1000	Drawing, Engineering and Associated List.
MIL-T-5624	Turbine Fuel, Aviation, Grades JP-4 and JP-5.
MIL-C-10387	Coupling, Clamp, Pipe, with Bolts and Synthetic Rubber Gaskets for Grooved End Pipe,
MIL-L-10547	Liner, Case, and Sheet, overwrap, water Vaporproof or Waterproof, Flexible.

STANDARDS

MILITARY

MIL-STD-129	Marking for Shipment and Storage,
MIL-STD-130	Identification Marking of U.S. Military Property.
MIL-STD-143	Standards and Specifications Order of Precedence for the Selection of,
MIL-STD-808	Finish, Materials and Processes for Corrosion Prevention and Control in Support Equipment.
MIL-STD-810	Environmental Test Methods and Engineering Guidelines.
MIL-STD-831	Test Reports, Preparation of.

* (Copies of specifications and standards required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

* 2.1.2 Other publications. The following document(s) form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted shall be the issue listed In the current DoDISS and the supplement thereto, if applicable.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS

ASME	Unfired Pressure Vessels Code

(Copies of the ASME code may be obtained upon application to the American Society of Mechanical Engineers, 29 West 39th Street, New York, NY 10018.)

* 2.1.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

* 3.1 First article. This specification makes provisions for first article testing.

3.2 Components. The strainer shall consist of a housing assembly and a screen assembly.

3.3 Selection of specifications and standards. Specifications and standards for necessary commodities and services not specified herein shall be selected in accordance with MIL-STD-143.

3,4 Materials. Materials shall be as specified herein, Materials not definitely specified shall be of the corrosion-resistant type or treated to resist corrosion due to fuels, salt spray, or atmospheric conditions likely to be met in storage or normal service and entirely suitable for the purpose. Materials shall be free from all defects and imperfections that might affect the serviceability of the finished strainer.

3.5 Design and construction. The sediment strainer shall consist of a housing assembly having both inlet and outlet piping connections, a strainer assembly within the housing assembly and a housing head attached to the housing assembly that allows removal of the screen from the housing assembly, The design and construction of the sediment strainer shall not pemit any fluid to bypass the screen of the screen assembly. The design and construction of the sediment strainer shall permit easy removal of the screen assembly from the strainer assembly without disconnecting any piping. The sediment strainer shall be designed and constructed to be rigidly supported by the connecting piping.

3.5.1 Pressure rating. The strainer shall be designed for a working pressure of 235 pounds per square inch. The screen assembly shall be designed to withstand a differential pressure of 125 pounds per square inch gage without damage.

3.5.2 Reliability. The strainer shall be designed and constructed as specified herein and to successfully complete the tests specified in 4.4.3 with no failures preventing satisfactory performance.

3.5.3 Maintainability. The design and construction of the strainer shall provide for or do the following.

a. A minimum number of parts consistent with reliability and performance specified herein.

b. Wherever practicable, minimize the time and training necessary for assembly, disassembly, location of trouble sources, and maintenance.

c. Wherever practicable, allow maintenance with general-purpose tools and equipment normally available commercially. Use of special purpose tools and equipment shall be subject to approval by the procuring activity.

d. Allow adjustments, servicing, and replacement of parts and components with minimum disturbance to other equipment elements.

3.5.4 Foolproofness. Where improper installation of an item could cause malfunctioning of that item or the system in which it is installed, an unsymmetrical mounting means shall be provided. This mounting shall be so designed that the item can only be installed in its proper operating position.

3.6 Performance.

3.6.1 Environmental conditions. The strainer shall be capable of operating under and withstanding the following environmental conditions:

3,6.1.1 Temperature ranges.

3.6.1.1.1 Operating temperatures. The strainer shall not be damaged by storage in ambient temperature from –80 to +160° Fahrenheit for not less than 50 hours.

3.6.1.2 Humidity. The strainer shall not be damaged by operation or storage in any relative humidity up to and including 100 percent, including conditions wherein condensation takes place in the form of water or frost.

3.6.1.3 Fungus. The strainer shall not be damaged by exposure to moist fungus growth such as encountered in tropical and subtropical climates.

3.6.1.4 Sand and dust. The strainer shall not be damaged by operation or storage in an atmosphere containing airborne sand and dust particles such as encountered in normal and desert operations.

3.6,1.5 Salt atmosphere. The strainer shall not be damaged by operation or storage in an atmosphere containing salt-laden moisture as encountered neat bodies of salt water and in transportation on shipboard.

3.6.2 Pressure loss. When flowing 0.780 specific gravity fuel at 600 gpm. the pressure loss shall not exceed 4 pounds per square inch.

3.7 Details of components.

3.7.1 Housing assembly. The housing assembly shall be constructed of aluminum-alloy material. The inlet and outlet pipe connections shall be in line (same horizontal and verticle planes). The housing assembly shall have either a flange or a coupling groove for attachment of the housing head, Housing assembly and flange, if used, shall be designed in accordance with the ASME Unfired Pressure Vessel Code, design pressure shall be 235 pounds per square inch gage, If a coupling groove is used, the connection neck shall be either forged or cast aluminum alloy, and the groove shall conform to Figure 2 dimensions of MIL-C-10387. The screen assembly shall be both installable and removable from the head assembly after the housing head has been removed. A 0.50 inch drain plug shall be provided. Location of the drain plug shall be as specified (see 6.2). Location of the drain plug will be determined according to the installed attitude of the sediment strainer so as to assure that the drain plug is positioned at the lowest point with respect to the ground plane.

3.7.1.1 Piping connections. Housing assembly piping connections shall be either type I or type II as specified (see 6.2). Type I piping connections are intended for Air Force procurements; type II connections are intended for Navy applications.

3.7.1.1.1 Type I. Type I piping connections, inlet and outlet, shall be grooved in accordance with the nominal 4 inch pipe size dimensions of figure 2 of MIL-C-10387.

3.7.1.1.2 Type II. Type II piping connections, both inlet and outlet, shall be flanged for 6 inch pipe. The flanges shall be plain faced and at least 1 inch thick; have an 11 inch outside diameter with eight 0,6875 inch bolt holes equally spaced on a 9.50 inch bolt circle. Flanges shall not interfere with removal of the housing head from the housing assembly.

3.7.1.2 Housing head. Housing head material, design and construction shall be consistent with that of the housing assembly.

3.7.1.2.1 Coupling. If coupling grooves are used for attachment of the housing head to the housing assembly, then appropriate bolts, gasket and an aluminum coupling clamp conforming to MIL-C-10387 shall be fitted for retention of the housing assembly.

3.7.2 Screen assembly.

3.7.2.1 Screen. The screen shall be a 40-mesh monel wire screen or monel wire cloth, or approved equal, having wire diameter of between 0.010 and 0.0135 inch. The total area of the screen shall be a minimum of 124 square inches . The seam shall be lapped or crimped, with two or more thicknesses joined by spot welding to monel backup strips or approved equal.

3.7.2.2 Retainer frame assembly. The retainer assembly shall be stainless steel, of a type and temper suitable for the intended use. The frame assembly shall be perforated with openings having a combined total area of not less than 75 square inches.

* 3.8 Part numbering of interchangeable parts. All parts having the same manufacturer's part number shall be functionally and dimensionally interchangeable. The item identification and part number requirements of DOD-D-1000 shall govern the manufacturer's part numbers and changes thereto.

3.9 Weight. The weight of the complete strainer shall not exceed 40 pounds.

3.10 Flow direction marking. Direction of flow shall be indicated by means of a suitably metal plate attached to the strainer housing. In lieu of a plate, an arrow may be stamped on the housing.

3.11 Finish. The strainer shall be finished in accordance with MIL-STD-808, type I, color 13538.

3.12 Identification of product. Equipment, assembles, and parts shall be marked for identification in accordance with MIL-STD-130.

3.13 Workmanship. Workmanship shall be of the highest grade throughout and shall be in accordance with good commercial practice for this type of equipment.

4. QUALITY ASSURANCE PROVISIONS

* 4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all Inspection requirements as specified herein, Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections arc deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Classification of tests, The inspection and testing of the strainer shall be classified as follows:

* a. First article testing (see 4.4)

b. Acceptance tests (see 4.5)

4.3 Test condition. Insofar as practicable, apparatus used in conjunction with the testing specified herein shall be of laboratory precision type and shall be calibrated at intervals properly spaced to insure laboratory accuracy.

* 4.4 First article testing.

* 4.4.1 First article test sample tested by the contractor. One strainer shall be subjected to the tests specified in 4.4.3.

* 4.4.2 First article test report. Upon completion of the first article tests, a first article test report--shall be prepared in accordance with MIL-STD-831. All observed values shall be recorded in the test report, Dimensional drawing depicting the configuration and construction details of sediment components shall be furnished with test report.

4.4.2.1 Reliability and maintainability information. The following information shall be submitted as an attachment accompanying the above report or shall be included as part of that report:

a. All failures, maintenance, and other events recorded shall be identified by accumulated operating time, miles, cycles, or position in the test procedure as appropriate. Test conditions during the failures or irregular operations identified shall be recorded.

b. Description of the engineering reasoning and of any tests conducted to determine assignable causes for all failures and irregular operations identified.

c. Description of the engineering reasoning behind any corrections made, to be made on production Items, or proposed to be made and behind the predicted effectiveness of those corrections.

d. Test activity or contractor comments on Item features or requirements that if modified should improve the item.

e. Test activity or contractor comments on field conditions or procedures to be avoided or cultivated to increase the reliability and useful life of the item.

f. Estimates (±5 percent of actual experienced) of man-hours required for each maintenance and servicing action during the tests. A brief description of the qualifications and experience of the personnel involved shall be included and shall be adequate to allow comparison to the personnel anticipated in similar field work.

* 4.4.3 First article tests. First article tests shall consist of all tests described under 4.6.

4.5 Acceptance tests. The acceptance tests shall consist of the individual tests.

4.5.1 Individual tests. Each strainer shall be subjected to the following tests as described under 4.6.

a. Examination of product.

b, Hydrostatic tests.

4.6 Test methods.

4.6.1 Examination of products. The strainer shall be inspected to determine compliance with the requirements specified herein with respect to materials, workmanship, dimensions, weight and marking. Ease of removal of the screen assembly without disconnecting any piping shall be demonstrated. The design and construction of the sediment strainer shall be examined to insure that no fluid is permitted to bypass the screen of the screen assembly

* 4.6.2 Environmental conditions. The strainer shall be subjected to the following environmental tests conducted in accordance with the specified procedures of MIL-STD-810. An engineering evaluation concerning the ability of the equipment to resist the exposure specified in 4.6.2.2 through 4.6.2.5 shall be considered as meeting the tests specified herein.

4.6.2.1 Temperature tests.

* 4.6.2.1.1 High temperature exposure. The strainer shall be installed in a test chamber and the high temperature exposure test performed in accordance with procedure I of MIL-STD-810. No adverse effects that would affect operation at normal temperature shall result from this exposure. The chamber temperature shall be reduced to 130°. Fahrenheit and the tests specified in 4.6.3 and 4.6.5 shall be conducted.

* 4.6.2.1.2 Low temperature exposure. The strainer shall be installed in a test chamber and the low temperature exposure test performed in accordance with procedure I of MIL-STD-810, No adverse effects that would affect operation at normal temperature shall result from this exposure. With the temperature stabilized at -65° Fahrenheit, the tests specified in 4.6.3 and 4.6.5 shall be conducted.

* 4.6.2.2 Humidity. A humidity test shall be conducted in accordance with procedure I of MIL-STD-810. There shall be no excessive corrosion resulting from this test.

* 4.6.2.3 Fungus. A fungus test shall be conducted in accordance with procedure I of MIL-STD-810. After exposure, the strainer shall exhibit no effects of fungus attack of a deleterious nature.

* 4.6.2.4 Sand and dust. A sand and dust test shall be conducted in accordante with procedure I of MIL-STD-810. Entrance of dust shall not be permitted.

* 4.6.2.5 Salt atmosphere. A salt spray test shall be conducted in accordante with procedure I of MTL-STD-810. The strainer shall exhibit no effects of a deleterious nature,

* 4.6.3 Pressure loss. Fluid conforming to MIL-T-5624 having a specific gravity of not less than 0.780 shall be flowed through the strainer at a rate of 600 gpm. The measured pressure loss across the line strainer shall not exceed 4 pounds per square inch. If a different test fluid is used, the pressure loss shall be adjusted to account for difference in specific gravity and viscosity; a detailed explanation of the adjustment shall be furnished in the test report.

4.6.4 Differential pressure. The test fluid shall be contaminated with foundry dust, or equal, and pumped through the strainer until the pressure differential between the inlet and outlet of the strainer reaches 125 pounds per square inch. The addition of dirt shall be discontinued, but the pumping shall be continued for a period of 10 minutes at a flow rate sufficient to maintain the pressure differential at 125 pounds per square inch The screen assembly shall then be examined and shall exhibit no evidence of rupture.

4.6.5 Hydrostatic test, The strainer housing shall be hydrostatically tested in accordance with the ASME code. The test pressure shall be not less than 350 pounds per square inch gage. The housing shall satisfactorily withstand this pressure.

4.7 Inspection of the preservation, packaging, packing and marking for shipment and storage. Sample items or packs and the inspection of the preservation, packaging, packing and marking for shipment and storage shall be in accordance with the requirements of section 5, or the documents specified therein.

5. PACKAGING

5.1 Preservation and packaging. Preservation and packaging shall be level A or C as specified (see 6.2).

5.1.1 Level A. Strainers shall be packaged in individual cartons conforming to PPP-B-636. The completed package shall conform to MIL-P-116, method III, and shall be capable of passing the rough handling tests specified therein.

5.1.2 Level C. Strainers shall be packaged in accordance with the contractor's commercial practice.

5.2 Packing. Packing shall be level A, B or C as specified (see 6.2).

* 5.2.1 Level A. Shipping containers shall conform to the export-type requirements of PPP-B-576, PPP-B-585, PPP-B-591, PPP-B-601, PPP-B-621, PPP-B-636, or PPP-B-640. Closure and strapping shall be in accordance with the applicable container specification or appendix. Tape conforming to PPP-T-97 may be used in lieu of steel strapping for fiberboard containers only. When the container or packaging material immediately within the exterior container is not waterproof, a case liner shall be provided, or if a water-resistant fiberboard container conforming to PPP-B-636 is used, all openings may be sealed with tape conforming to A-A-884, A-A-1586 and A-A-1830 to provide needed waterproofness. Sealed case liners shall conform to the requirements of MIL-L-10547 and appendix or as an alternate, material meeting the requirements of PPP-B-1055 may be used. The seams, joints, and closure shall be equal to the waterproofness of the material itself. When adhesive material is used for sealing the joints and closure, the material shall conform to MMM-A-260.

5.2.2 Level B. Shipping containers, closure, and strapping shall be in accordance with the domestic requirements of the container specifications listed in 5.2.1.

5.2.3 Level C. Strainers shall be packed to insure safe delivery at the lowest cost for packing and transportation charged combined.

5.3 Marking. In addition to any special marking required by the contract or order, unit packages, intermediate packages, and shipping containers shall be marked in accordance with the requirements of MIL-STD-129. The shipment marking shall be:

Strainer, Sediment, Fuel Servicing Unit, 600 GPM

6. NOTES

6.1 Intended use. The strainer is intended for use as an integral part of a gasoline or jet fuel dispensing system, for installation on fuel servicing units.

6.2 Ordering data. Procurement documents should specify the following:

a. Title, number, and date of this specification.

b. Type piping connections required (see 1.2 and 3.7.1.1).

c. Location of drain plug (see 3.7.1).

d. Selection of applicable levels of preservation and packaging, and packing (see 5.1 and 5.2).

6.3 The margins of this specification are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:
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Navy - YD

Preparing activity:
Air Force - 82

(Project 4930-0313)

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3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
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	☐ MANUFACTURER
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5. PROBLEM AREAS

a. Paragraph Number and Wording.

b. Recommended Wording

c. Reason/Rationale for Recommendation

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
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